

CLAIMS

What is claimed is:

1. A method of connecting a mobile host to an access network with an intelligent device connected to the mobile host, comprising the steps of:
 - (a) receiving a host configuration request message from the mobile host using a host configuration protocol;
 - 5 (b) sending an access request to the access network;
 - (c) receiving a response to the access request from the access network with an IP address for the mobile host;
 - (d) selecting an IP address in the same subnet as the IP address for the mobile host; and
- 10 (e) sending a reply message to the mobile host with the selected IP address as the source IP address and the IP address for the mobile host as the destination IP address.

2. A method of connecting a mobile host to access an access network with an intelligent device connected to the mobile host, comprising the steps of:
 - (a) receiving a DHCP_DISCOVER message from the mobile host;
 - 5 (b) sending an access request to the access network;
 - (c) receiving a response to the access request from the access network with an IP address for the mobile host;
 - (d) selecting an IP address in the same subnet as the IP address for the mobile host;
- 10 (d) sending a DHCP_OFFER message to the mobile host;
- (e) receiving a DHCP_REQUEST message from the mobile host; and

(f) sending a DHCP_REQUEST message to the mobile host.

3. The method of claim 1, wherein the DHCP_DISCOVER message is packaged into an Ethernet frame with a first MAC address as a source MAC address and an Ethernet broadcast address.

4. The method of claim 2, wherein the DHCP_OFFER message is packaged into an Ethernet frame with a second MAC address as a source MAC address and said first MAC address as a destination MAC address.

5. A method of disconnecting a mobile host from an access network with an intelligent device connected to the mobile host, comprising the steps of:

- (a) receiving a DHCP_RELEASE message from the mobile host;
- 5 (b) sending a disconnect request message to the access network;
- (c) receiving a disconnect response message from the access network.

6. The method of claim 4, wherein said DHCP_RELEASE message contains a destination IP address selected by the logical device, said destination IP address being on the same subnet as the IP address allocated to the mobile host.

7. A method of connecting a mobile host to a service provider's network, through a CPDP network or a WLAN, with an intelligent device connected to the mobile host, comprising the steps of:

- (a) receiving a DHCP_DISCOVER message from the mobile host;
- 5 (b) sending an access request to the WLAN;
- (c) receiving a response from the WLAN with an IP address for the mobile host on the WLAN;
- (d) sending an access request to the service provider's network;

10 (e) receiving a response from the service provider's network with an IP address for the mobile host on the service provider's network;

(d) selecting an IP address in the same subnet as the IP address for the mobile host;

(e) sending a DHCP_OFFER message to the mobile host;

(f) receiving a DHCP_REQUEST message from the mobile host; and

15 (g) sending a DHCP_ACKNOWLEDGE message to the mobile host

8. A method of routing IP packets from a mobile host to a target host on a WLAN with an intelligent device connected to the mobile host, comprising the steps of;

5 (a) receiving an ARP request message with a destination IP address of the target host;

(b) sending a fake ARP reply message with said destination IP address of the target host corresponding to a MAC address of the intelligent device;

10 (c) receiving an IP packet encapsulated in an Ethernet frame from the mobile host;

(d) sending an IP-in-IP packet encapsulated in a WLAN frame to an access point on the WLAN.

9. The method of claim 8, wherein said IP-in-IP packet encapsulated in said WLAN frame of step (c) is of the form [MAC_{NIC}, MAC_{AP}[IP_{MH@AN},

IP_{RAS@ON} [IP_{MH@ON}, IP_{DST@ON}, IP PAYLOAD]]], wherein MAC_{NIC} is the MAC of the WLAN interface, MAC_{AP} is the MAC of the access point,

15 IP_{MH@AN} is the IP address of the mobile host on the access network, IP_{RAS@ON} is the IP address of the RAS on the WLAN, IP_{MH@ON} is the IP address of the

mobile host on the WLAN, and $IP_{DST@ON}$ is the IP address of the target host on the WLAN.